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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,044	12/15/2000	Brian D. Butler	30913-1001	2318

7590 03/07/2002

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EXAMINER
PATEL, PARESH H

ART UNIT	PAPER NUMBER
2829	

DATE MAILED: 03/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/738,044	BUTLER, BRIAN D.	
	Examiner	Art Unit	
	Paresh Patel	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☒ Claim(s) ~~1-28~~ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the second robotic arm and the second high frequency probe assembly of claim 2, the second signal probe and the second ground probe of claim 3, two high frequency probe assemblies of claims 14 and 25, and two robotic arms of claim 16 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 5-6, 8-10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz (US 5498965) in view of Kerscher et al. (US 5498964).

Regarding claims 1 and 23 Mellitz discloses a robotic domain reflectometry test system [fig. 1] comprising: domain reflectometry instrumentation [element 10 of fig. 1];

and a passive, high frequency probe assembly [element 14 of fig. 1] comprising a signal probe [pin of element 14 near element 31 of fig. 2] and a ground probe [pin of element 14 near element 30 of fig. 7] having a fixed, non-adjustable pitch [pins of element 14 of fig. 2 and 7 and lines 11-15 of column 3], said probe assembly being electrically connected to said domain reflectometry instrumentation [see element 14 and 10 of fig. 1].

Mellitz discloses all the essential elements of the claimed invention except for a robotic arm to move probe assembly to test an electrical component. Kerscher et al. (hereafter Kerscher) discloses a robotic arm to move probe assembly to test an electrical component [element 1104 of fig. 11 and lines1-18 of column 9]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Mellitz and to include robotic arm as taught by Kerscher for the purpose of improving testing speed and efficiency.

Regarding claim 3, the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for said probe assembly comprises a second signal probe and a second ground probe having a fixed, non-adjustable pitch, whereby differential domain reflectometry tests may be performed on the electrical component. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Mellitz in view of Kerscher and add a second signal probe and a second ground probe as claimed, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

Regarding claim 5, Kerscher discloses a robotic control system comprising means for directing said robotic arm to acquire from said probe assembly changing station a probe assembly having a correct pitch for testing of test points of the electrical component having a same pitch [lines 1-18 of column 9].

Regarding claim 6, Mellitz discloses a calibration/verification station [lines 56-64 of column 4 and fig. 1] accessible by said robotic arm and comprising a calibrated airline [fig. 4].

Regarding claim 8, Mellitz discloses probe assembly mimics electrical characteristics of a coaxial structure [lines 56-67 of column 4 and 1-6 of column 5].

Regarding claim 9, Mellitz discloses a system which can test transmission line on printed wiring board. It is obvious to test components comprising dimensions of between approximately 5.25 inches x 0.5 inches and 36 inches x 28.5 inches using Mellitz disclosed a system.

Regarding claim 10, Kerschner discloses additionally comprising a robotic control system comprising means for automatically planning testing of the electrical component by importation of computer aided design data for the electrical component [lines 1-18 of column 9].

6. Claim 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Swart (US 6051978).

Regarding claim 2, the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for a second robotic arm and a

second passive, high frequency probe assembly. Swart discloses a second robotic arm [element 20, 22 and 24 of fig. 1] and a second passive, high frequency probe assembly [element 38 of fig. 2A] whereby differential domain reflectometry tests may be performed on the electrical component [fig. 1 and lines 26-67 of column 2 and lines 1-6 of column 3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and include a second arm and a second probe assembly as taught by Swart, so as to simultaneously test a plurality of electrical components and obtain faster operation.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Sinsheimer et al. (US 5471148).

Regarding claim 4, the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for additionally comprising a probe assembly changing station accessible by said robotic arm, said probe assembly changing station comprising holders for a plurality of probe assemblies. Sinsheimer et al. (hereafter Sinsheimer) discloses a probe assembly changing station and a holder [lines 1-6 of column 3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and include a probe assembly changing station and a holder as taught by Sinsheimer for the purpose of supporting the probe during testing of an electrical component.

8. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Bottman (US 5633801).

Regarding claim 7, the combination Kerscher and Mellitz discloses all the essential elements of the claimed invention except for a length of trace between 0.5 inch and 150 feet. Bottman discloses a length of trace between 0.5 inch and 150 feet [lines 23-27 of column 9].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and use a length of trace between 0.5 inch and 150 feet as taught by Bottman, so as to measure electrical characteristic of electrical trace at any length using TDR.

Kerscher, Mellitz and Bottman discloses all the essential elements of the claimed invention except for a test trace having standard deviation of test result impedance is 0.03 ohms or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Kerscher, Mellitz and Bottman and use a standard deviation of test result impedance is 0.03 ohms or less, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

9. Claims 11, 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Cram et al. (US 5631562).

Regarding claims 11, 19 and 26 the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for a system records impedance and propagation delay and calculates a dielectric constant for each test point of the electrical component. Cram et al. (hereafter Cram) discloses a system records impedance and propagation delay and calculates a dielectric constant for each test point of the electrical component [see lines 7-15 of column 10 and 50-67 of column 12 and 1-12 of column 13]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include storing and calculating device as taught by Cram. The ordinary skill artisan would have been motivated to modify the combination of Kerscher and Mellitz to retrieve saved data for comparison during testing an electrical component.

10. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerschner in view of Sinsheimer.

Regarding claims 12 and 24 Kerschner discloses: a robotic arm [element 1104 of fig. 11] and high-frequency probe assembly [element 606 of fig. 11].

Kerscher discloses all the essential element of the claimed invention except for a probe assembly changing station accessible by said robotic arm, said probe assembly changing station comprising holders for a plurality of probe assemblies. Sinsheimer et al. (hereafter Sinsheimer) discloses a probe assembly changing station and a holder [lines 1-6 of column 3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and

include a probe assembly changing station and a holder as taught by Sinsheimer for the purpose of supporting the probe during testing of an electrical component.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Sinsheimer as applied to claim 12 above, and further in view of Mellitz.

Regarding claim 13, the combination of Kerscher and Sinsheimer discloses all the essential elements of the claimed invention except for said probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch. Mellitz discloses probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch [element 14 of fig. 2 and 7].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify test system as taught by Kerschner in view of Sinsheimer to include probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch as taught by Mellitz, so as to obtain longer life from test probe by reducing wear and tear.

12. Claims 14-18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz in view of Kerschner.

Regarding claims 14-15 and 25 Mellitz discloses: A robotic domain reflectometry test system [fig. 1] comprising: differential domain reflectometry instrumentation [element 10 of fig. 1]; and a passive, high frequency probe assemblies each comprising a signal probe [element 14 of fig. 1, 2 and 7].

Mellitz discloses all the essential elements of the claimed invention except for a

robotic arm for probe assembly, and being moved, electrically connected to, and retracted from test points on an electrical component to be tested by said at least one robotic arm [element 1104 of fig. 11]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz to include robotic arm as taught by Kerscher for faster operation of testing electrical components.

Mellitz and Kerscher discloses all the essential elements of the claimed invention except for a two high frequency probe assembly being hold and moved by one robotic arm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Mellitz and Kerscher and to use second high frequency probe assembly with one robotic arm of Kerscher, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

Regarding claim 16, Use of at least one robotic arm comprises two robotic arms each holding one of said probe assemblies is an obvious design choice, since Kerscher discloses a robotic arm to hold one probe assembly. It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect two robotic arm with one robotic arm to hold two test devices for faster testing operation of an electrical component.

Regarding claim 17, Mellitz discloses at least one of said probe assemblies additionally comprises a ground probe [pin of element 14 near element 30 of fig. 1]

having a fixed, non-adjustable pitch [lines 11-15 of column 3] with respect to said signal probe on said at least one of said probe assemblies.

Regarding claim 18, Mellitz discloses wherein both of said probe assemblies additionally comprise a ground probe having a fixed, non-adjustable pitch [lines 11-15 of column 3].

13. Claims 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz in view of Kerscher and Bottman.

Regarding claims 20 and 27 Mellitz discloses a robotic domain reflectometry test system [fig. 1] comprising: domain reflectometry instrumentation [element 10 of fig. 1]; and a passive, high frequency probe assembly [element 14 of fig. 1] comprising a signal probe [pin of element 14 near element 31 of fig. 2] and a ground probe [pin of element 14 near element 30 of fig. 7] having a fixed, non-adjustable pitch [pins of element 14 of fig. 2 and 7 and lines 11-15 of column 3], said probe assembly being electrically connected to said domain reflectometry instrumentation [see element 14 and 10 of fig. 1].

Mellitz discloses all the essential element of the claimed invention except for a robotic arm to move probe assembly to test an electrical component and a length of trace between 0.5 inch and 150 feet and a test trace having standard deviation of test result impedance is 0.03 ohms or less.

Kerscher discloses a robotic arm to move probe assembly to test an electrical component [element 1104 of fig. 11 and lines1-18 of column 9].

Bottman discloses a length of trace between 0.5 inch and 150 feet [lines 23-27 of column 9].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz to include robotic arm as taught by Kerscher and a length of trace between 0.5 inch and 150 feet as taught by Bottman, so as to obtain faster operation of testing electrical components.

Kerscher, Mellitz and Bottman discloses all the essential element of the claimed invention except for a test trace having standard deviation of test result impedance is 0.03 ohms or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Kerscher, Mellitz and Bottman and use a standard deviation of test result impedance is 0.03 ohms or less, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

14. Claims 21-22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz (US 5498965) in view of Kerscher et al. (US 5498964).

Regarding claims 21 and 28 Mellitz discloses a robotic domain reflectometry test system [fig. 1] comprising: domain reflectometry instrumentation [element 10 of fig. 1]; and a passive, high frequency probe assembly [element 14 of fig. 1] comprising a signal probe [pin of element 14 near element 31 of fig. 2] and a ground probe [pin of element 14 near element 30 of fig. 7] having a fixed, non-adjustable pitch [pins of element 14 of fig. 2 and 7 and lines 11-15 of column 3], said probe assembly being electrically

connected to said domain reflectometry instrumentation [see element 14 and 10 of fig. 1], and a calibration/verification station [lines 56-64 of column 4 and fig. 1] accessible by said robotic arm and comprising a calibrated airline [fig. 4].

Mellitz discloses all the essential element of the claimed invention except for a robotic arm to move probe assembly to test an electrical component. Kerscher et al. (hereafter Kerscher) discloses a robotic arm to move probe assembly to test an electrical component [element 1104 of fig. 11 and lines1-18 of column 9].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz to include robotic arm as taught by Kerscher to obtain faster operation during testing of an electrical components.

Regarding claim 22, Mellitz discloses a calibrated airline is selected from the group consisting of 28 ohm and 50 ohm NIST calibrated airlines [lines 59-62 of column 4].

15. Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 703-306-5859. The examiner can normally be reached on M-F (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 703-308-1680.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Paresh Patel
March 6, 2002

3-6-02

MICHAEL J. SHERRY
PRIMARY EXAMINER